

Nucleonica Training Course

Nuclear Power in Space, Tomaz Žagar

Exercises

Exercise 1

Calculate specific power for different radioisotope materials considered as heat sources in RTG applications (Pu-238, Am-241, Cs-137, Co-60). The data and forms of these isotopes are given in the table.

Material	Material form	Isotope	Isotope Enrichment	Final Material Density [g/cm ³]
PuO ₂	Ceramic	²³⁸ Pu	84 wt% Pu-238, 14 %Pu-239, 2% Pu-240	10.0
AmO ₂	Ceramic	²⁴¹ Am	100 wt% Am-241	10.5
CsCl	Salt	¹³⁷ Cs	35 wt% Cs-137	3.2
Cobalt	Metal	⁶⁰ Co	10 wt% Co-60	8.8

Modules: Nuclide Datasheet, Decay Engine, Nuclide Mixtures

Exercise 2

What is the approximate energy of solar electrons needed to penetrate 1 cm and 4 cm of aluminium shielding? Calculate kinetic energy of electrons with approximate range (CSDA Range) slightly over 1 cm and 4 cm respectively.

Module: Range & Stopping Power

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